

REMARKS

I. Introduction

Applicants express appreciation for Examiner Gary's courtesy and professionalism in conducting a personal interview on July 15, 2004. In response to the Office Action dated April 22, 2004, Applicants have amended claims 18, 21 22 and 24 in the manner discussed and approved by the Examiner during the personal interview so as to further clarify the claimed subject matter. Support for these amendments can be found, for example, in Fig. 1 and the corresponding section of the specification. No new matter has been added. Also, please note that a certified copy of the EPO 99307888.0 as required by 35 U.S.C. § 1.119(b) and as requested by the Examiner is being prepared by the Applicant and will be forwarded to the Examiner upon receipt.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

II. The Rejection Of Claims 21, 22, 24, 26 and 27 Under 35 U.S.C. § 102

Claims 21, 22, 24, 26 and 27 are rejected under 35 U.S.C. § 102(e) as being anticipated by USP No. 6,667,963 to Rantalainen. Applicants respectfully traverse this rejection for at least the following reasons.

Claims 21 and 22 recite in-part that a positioning element synchronizes with downlink transmissions of the controlling base station.

In accordance with one embodiment of the present invention, in order to position the mobile station 2, positioning signals are transmitted from the positioning elements 3/5 so as to be detected by the mobile station 2. Next, the mobile station 2 associates the detection of the signals transmitted by the positioning elements 3/5 with the identity of the corresponding position elements, and with

the detection time relative to the time of detection by the mobile station 2 of a signal or part of a signal transmitted by the base station 4. This information is then transmitted to the main base station 4 with which the mobile station 2 is in communication. The positioning elements 3/5 are in synchronization with the main base station 4 (i.e. they are synchronized to the downlink transmissions of the serving base station) and thus the time of transmission of the positioning signals is produced. By calculating the time taken for the transmission signals to travel between the positioning elements 3/5 and mobile station 2, the distance of the mobile station 2 from each of the positioning elements 3 can be calculated. Using a return trip delay measurement technique, the distance between the base station 4 and the mobile station 2 can also be calculated. Once the distance of the mobile station 2 from at least three geographically separated positions is known, the position of the mobile station 2 can be determined by triangulation (see, page 18, line 17 to page 19, line 20 of the specification).

Turning to the cited prior art, the Examiner asserts that the base transceiver stations 1-6 correspond to the claimed position elements. However, as discussed during the personal interview, Rantalainen does not disclose or suggest synchronizing the position element with downlink transmissions of the controlling base station, as recited by independent claims 21 and 22. Indeed, contrary to the conclusion set forth in the Office Action, at the portion cited by the Examiner, Rantalainen discloses synchronizing the mobile station 16 with the serving BTS 6 in order to ensure that the data transmitted from the mobile station 16 is received at the base transceiver stations 6 in the time slot allocated to the mobile station 16 (see, col. 4, lines 10-14).

In contrast, the position elements of the present invention are synchronized with the controlling base station such that the positioning elements have a direct and known timing relationship with respect to the base station transmissions. This relationship information, coupled

with their known location, advantageously eliminates the need for any additional monitoring/measurement of the positioning elements' signals or the base station's signals when determining the position of the mobile station.

As such, Rantalainen does not disclose or suggest synchronizing the base transceiver station 6 with any controlling base station in the manner asserted by the Examiner. Thus, at a minimum, Rantalainen fails to disclose or suggest a position element that is synchronized with downlink transmissions of a controlling base station, as recited by claims 21 and 22.

Furthermore, claim 24 recites in-part a mobile station that is synchronized with downlink transmissions from the controlling base station, wherein the timing windows for the expected time of arrival of the positioning signals to be detected is transmitted to the mobile station from the controlling base station in advance of receipt of the positioning signals at the mobile station.

In accordance with one embodiment of the present invention, the base station 4 transmits a signal to the mobile station 2 which informs the mobile station 2 of the expected time of arrival and the character of the positioning signals *prior to* the transmission of the positioning signals by the positioning elements 3/5.

However, at a minimum, Rantalainen does not disclose or suggest a controlling base station that transmits positioning signals to the mobile station 16 prior to a transmission of the positioning signals by the alleged positioning elements 1-6. Indeed, Rantalainen only discloses that the mobile station 16 determines an observed time difference for each of the listed base transceiver stations 1-5, relative to the serving base transceiver station 6, from the signals broadcast by the listed base transceiver stations 1-5, in which the mobile station 16 listens for synchronization sequences contained in these signals during the time windows defined by the various real time differences, such that the observed time differences are transmitted from the mobile station 16 to the serving

base transceiver station 6, and are used by the network to compute the position of the mobile station 16 (see, Abstract).

In contrast, the base station 4 of the present invention instructs the mobile station 2 to look for at least two positioning signals occurring in two separate windows, and informs the mobile station 2 both when to look and exactly what synchronization character to look for in the positioning signal. Then, the base station 4 pages the positioning elements 3/5 using the Paging Indication Channel (PICH) so that the positioning elements 3/5 transmit a positioning signal at the next allotted time (see, e.g., page 32, line 23 to page 33, line 6) such that triangulation is performed on the basis of the position of base station 4 and positioning element 3/5 together with the information on the respected distances from the mobile station 2 to the base station 4 and to the positioning elements 3/5 so as to determine the position of the mobile station 2. Also, the Examiner has neither addressed how the alleged positioning signals transmitted by any controller base station are received at the mobile station 16 in advance of receipt of the positioning signals transmitted by the alleged positioning elements 1-6 at the mobile station 16.

Thus, at a minimum, Rantalainen fails to disclose or suggest that the timing windows for the expected time of arrival of the positioning signals to be detected are transmitted to the mobile station from the controlling base station in advance of receipt of the positioning signals at the mobile station, as recited by claim 24.

As anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), and at a minimum, Rantalainen fails to disclose the foregoing claim elements, it is clear that Rantalainen does not anticipate independent claim 21, 22 or 24, or any of the claims dependent thereon.

III. The Rejection Of Claims 18-20 Under 35 U.S.C. § 103

Claims 18-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rantalainen in view of USP No. 5,765,112 to Fitzgerald. Applicants respectfully traverse this rejection for at least the following reasons.

Claim 18 recites in-part a controlling base station which generates a paging signal and pages a plurality of positioning elements within the cell thereby causing the plurality of positioning elements to generate and transmit the positioning signals.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the **claimed invention** where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *Ecolochem Inc. v. Southern California Edison Co.*, 227 F.3d 1361, 56 U.S.P.Q.2d (BNA) 1065 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999); *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). See also **M.P.E.P § 2143.01**.

In the pending Office Action, the Examiner admits that Rantalainen does not disclose or suggest the step of paging positioning elements within the cell to transmit the positioning signals, but alleges that Fitzgerald discloses, at Col. 3, lines 24-45, line 63 to Col. 4, line 2 and Col. 12, line 64, the foregoing claim elements. It is respectfully submitted that this conclusion is also in error.

More specifically, as discussed during the personal interview, at the cited portion, Fitzgerald discloses a system comprising a message operations center (MOC) 30, which upon receiving a request for communication with a field unit 50, selects one of the available HF frequencies and a timeslot for the given field unit to transmit, and issues an outbound request message to the field unit which includes data indicating the selected HF frequency and timeslot. In other words, the MOC 30

of Fitzgerald functions to generate an outbound message which provides the selected frequency and timeslot to the field unit 50 so that the requested customer can determine the field unit's location. However, the field unit of Fitzgerald obtains its position data from "its associated geolocation receiver or by reading other data available to it." (see, col. 3, lines 63-66). As such, the field unit does not generate any positioning signals. Rather, the field unit receives its location data via the geolocation receiver. Thus, contrary to the conclusion set forth in the pending rejection, the field units 50 of Fitzgerald cannot be properly deemed to correspond to the claimed positioning elements, and that there are NO paging element disclosed by Fitzgerald, which functions to generate positioning signals which are transmitted to the mobile unit. Accordingly, Fitzgerald does not cure the defects of Rantalainen. Thus, at a minimum, Rantalainen and Fitzgerald, taken alone or in combination, do not disclose or suggest a controlling base station which generates a paging signal and pages a plurality of positioning elements within the cell thereby causing the plurality of positioning elements to generate and transmit the positioning signals, as recited by independent claim 18.

As each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and Rantalainen and Fitzgerald, taken alone or in combination, fail to do so, it is respectfully submitted that independent claim 18 is patentable over the prior art.

IV. The Rejection Of Claims 21-23 Under 35 U.S.C. § 103

Claims 21-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunn in view of Fitzgerald. Applicants respectfully traverse this rejection for at least the following reasons.

Claims 21 and 22 recite in-part that a positioning element synchronizes with downlink transmissions of the controlling base station, and transmits positioning signals with predetermined delays in relation to receipt of certain instances of signals transmitted from the controlling base station, or transmits positioning signals periodically at predetermined times relative to the time of detection by the positioning elements of a signal or part of a signal transmitted by the base station, respectively.

In the pending Office Action, the Examiner admits that Dunn does not disclose or suggest the step of paging or sending a signal or part of a signal to the positioning elements so as to transmit the positioning signals, but relies on Fitzgerald to cure these deficiencies. Also, it would appear that the range transceivers 30 of Dunn are asserted as corresponding to the claimed positioning elements.

However, as discussed during the personal interview, Dunn discloses that during operation, each of the range transceivers is adapted to *periodically* transmit approximately synchronized digital range signals (see, col. 6, lines 9-12). In other words, the range signals in Dunn are periodically transmitted by the range transceivers 30, which means the signals are transmitted at a predetermined rate, and the mobile unit 32 periodically monitors the secondary channel in order to receive the digital range signals.

As such, there is no need for the range transceivers 30 to transmit any positioning signals in relation to receipt of any signals transmitted from a base station, or relative to the time of detection of a signal or part of a signal transmitted by a base station in the manner alleged by the Examiner. In fact, it does not appear that Dunn has any device that can be considered comparable to the claimed base station. In this regard it is noted that the primary receivers 38 of Dunn merely communicate with the range transceivers 30 and function to synchronize the timing of the range signals transmitted by the range receivers 30 (see, col. 8, line 60 to col. 9, line 21) . However, the

primary receivers 38 of Dunn do not appear to even communicate with the mobile unit 32. As such, it is clear that the primary receivers 38 cannot be properly considered to correspond to the claimed base station, or the range transceivers 30 be deemed to correspond to the claimed positioning elements.

Furthermore, even *arguendo* that Dunn discloses the claimed base station and positioning elements, as discussed above, the field unit of Fitzgerald does not appear to transmit positioning signals with predetermined delays in relation to receipt of signals transmitted from any base station, or transmit positioning signals periodically at predetermined times relative to the time of detection of a signal or part of a signal transmitted by a base station. Accordingly, Fitzgerald does not cure the defects of Dunn.

Thus, at a minimum, Dunn and Fitzgerald, taken alone or in combination, do not disclose or suggest that a positioning element synchronizes with downlink transmissions of the controlling base station, and transmits positioning signals with predetermined delays in relation to receipt of certain instances of signals transmitted from the controlling base station, as recited by claim 21, or transmits positioning signals periodically at predetermined times relative to the time of detection by the positioning elements of a signal or part of a signal transmitted by the base station, as recited by claim 22.

As each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and Dunn and Fitzgerald, taken alone or in combination, fail to do so, it is respectfully submitted that independent claims 21-23 are patentable over the prior art.

V. The Rejection Of Claims 24 and 25 Under 35 U.S.C. § 103

Claims 24 and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunn in view of Rantalainen. Applicants respectfully traverse this rejection for at least the following reasons.

Claim 24 recites in-part a mobile station that is synchronized with downlink transmissions from the controlling base station, wherein the timing windows for the expected time of arrival of the positioning signals to be detected is transmitted to the mobile station from the controlling base station in advance of receipt of the positioning signals at the mobile station.

In the pending Office Action, it is admitted that Dunn does not disclose or suggest that the timing window for the expected time of arrival of the positioning signals to be detected is transmitted to the mobile station from the controlling base station in advance of receipt of the positioning signals at the mobile station, but Rantalainen is relied upon to cure this deficiency.

However, as discussed above, Rantalainen does not disclose or suggest a controlling base station that transmits positioning signals to the mobile station 16 prior to (i.e. in advance of receipt) a transmission of the positioning signals by the alleged positioning elements 1-6. Indeed, Rantalainen only discloses that the mobile station 16 determines an observed time difference for each of the listed base transceiver stations 1-5, relative to the serving base transceiver station 6, from the signals broadcast by the listed base transceiver stations 1-5, in which the mobile station 16 listens for synchronization sequences contained in these signals during the time windows defined by the various real time differences, such that the observed time differences are transmitted from the mobile station 16 to the serving base transceiver station 6, and are used by the network to compute the position of the mobile station 16 (see, Abstract).

In contrast, the base station 4 of the present invention instructs the mobile station 2 to look for at least two positioning signals occurring in two separate windows, and informs the mobile station 2 both when to look and exactly what synchronization character to look for in the positioning signal. Then, the base station 4 pages the positioning elements 3/5 using the Paging Indication Channel (PICH) so that the positioning elements 3/5 transmit a positioning signal at the next allotted time (see, e.g., page 32, line 23 to page 33, line 6) such that triangulation is performed on the basis of the position of base station 4 and positioning element 3/5 together with the information on the respected distances from the mobile station 2 to the base station 4 and to the positioning elements 3/5 so as to determine the position of the mobile station 2. It is also noted that the Examiner has neither addressed how the alleged positioning signals transmitted by any controller base station are received at the mobile station 16 in advance of receipt of the positioning signals transmitted by the alleged positioning elements 1-6 at the mobile station 16.

Thus, at a minimum, Dunn and Rantalainen, taken alone or in combination, fail to disclose or suggest that the timing windows for the expected time of arrival of the positioning signals to be detected are transmitted to the mobile station from the controlling base station in advance of receipt of the positioning signals at the mobile station, as recited by claim 24.

VI. **All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 18, 21, 22 and 24 are patentable for the

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reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

For all of the foregoing reasons, it is submitted that claims 19, 20, 23 and 25-27 are patentable over the cited prior art. Accordingly, it is respectfully submitted that the rejections of claims 21, 22, 24, 26 and 27 under 35 U.S.C. § 102 and claims 18-25 under 35 U.S.C. § 103 have been overcome.

VII. Conclusion

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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